

REMARKS

Reconsideration of this application courteously is solicited. By this paper, the specification has been amended, claims 10-13 have been canceled, and claims 1-8, 14, 15, and 17 have been amended.

With respect to the January 18, 2007 Office Action, claims 1 and 3-5 were rejected under the second paragraph of 35 U.S.C. § 112 for alleged indefiniteness. As the claims are amended, they are submitted to be in full compliance with the requirements of 35 U.S.C. § 112. Accordingly, the rejection is overcome. Withdrawal thereof earnestly is solicited.

Next, objection has been made to claims 6 and 14 as containing informalities. The objection is traversed. Claims 6 and 14 have been amended to place them in fully formal form.

Claims 1-4, 6, 8-15, and 17 have been rejected under 35 U.S.C. § 102(e) as purportedly anticipated by U. S. Patent 6,830,383 to Huang. This rejection is made moot with respect to claims 11-13 which are canceled. It is traversed with respect to claims 1-4, 6, 8-15, and 17.

As amended, both independent claims 1 and 14 clarify that the Applicants' claimed optical transceiver module has at least one optical subassembly, an optical receptacle, and a frame that are all separate from each other. Each of claims 1 and 14 describes that the optical receptacle receives the sleeve portion of the optical subassembly (or subassemblies). This coupling between the optical subassembly and the optical receptacle results in what can be thought of as an "intermediate assembly" often referred to as the "assembled body" in the specification. For Applicants' preferred examples of this, see Applicants' specification at, for instance, paragraphs [0048] and [0051].

Applicants' recited frame then has the coupled optical subassembly and optical receptacle, i.e., the "intermediate assembly" installed thereon. The installation remains slightly movable with respect to the frame but the "primary portion" of the optical subassembly is fixed in touching contact with the frame. Applicants' recited structure accomplishes two competing objectives, these being one, excellent optical coupling and two, excellent heat conduction to the frame away from heat-generating devices carried by the optical subassembly (e.g., thermo-

electric coolers, amplifiers and the like). Applicants' structure movably mounting the "intermediate assembly" to the frame, permits good optical alignment to be made without inducing large mechanical stresses on the components (e.g., the optical subassembly sleeve) which otherwise would occur if the "intermediate assembly" simply were fastened to the frame. (See, for instance, specification, paragraph [0039].) Once good optical coupling has been achieved, it is maintained by allowing some movement of the "intermediate assembly" relative to the frame, while fixing the optical assembly's "primary portion" (box-like portion) in contact with the frame to lock in the heat dissipation path from the optical subassembly to the frame. See specification paragraphs [0040], [0051], and [0052]. These structural requirements are described in both the independent claims.

In claim 1, see the last paragraph. Here, claim 1 describes that the "optical receptacle assembled with said optical subassembly is movably mounted to said frame and said primary portion of said optical subassembly is fixed in contact with said frame." Claim 14 similarly defines the frame as "configured to firmly mount said substrate and to movably mount said optical receptacle assembled with said transmitting optical subassembly and said receiving optical subassembly with said primary portion of each of said transmitting and said receiving optical subassemblies being fixed into contact with said frame." Hence, in either case: (1) the optical subassembly and the optical receptacle first are separate and then are coupled together before mounting to the recited frame; (2) the coupled optical subassembly and the receptacle together are movably mountable to the frame; and (3) the primary portion of the coupled optical subassembly is fixed to touch the frame. Applicants' structure, as thus recited in claims 1 and 14, would not have been taught to those of ordinary skill in the art by Huang.

Huang simply does not teach or suggest Applicants' requirement for construction and coupling of their optical subassembly, optical receptacle, and frame. Applicants respectfully urge that, to those of ordinary skill in the art, Huang makes no suggestion of Applicants' separate optical subassembly and optical receptacle which first themselves are coupled together, and then are movably installed on the frame in the manner claimed.

In regard to the foregoing, invitation is made to compare Applicants' exemplary, preferred embodiment with the structure taught by Huang. In Applicants' Fig. 1, subassemblies 12 and 13 are seen. Initially, they are separate from optical receptacle 11. All of subassemblies 12 and 13, and optical receptacle 11 are initially separate from frame 10. As the claims recite, the optical receptacle 11 receives sleeve portions 12a and 13a of optical subassemblies 12 and 13 respectively. (See specification, paragraph [0048].) After this is done, the "intermediate assembly" of the optical subassemblies 12, 13 with optical receptacle 11 is fixed to frame 10. As specification paragraphs [0051] and [0052] explain, the "intermediate assembly" is screw fastened to frame 10. However, screw holes 11e in the receptacle 11 do not have internal threads while screw holes 10e in frame 10 do have threads. This means that while the screws are being fastened for mounting receptacle 11 to frame 10, the receptacle can slide on the screws in the Y-direction because its holes 11e have no threads. Thus, receptacle 11 can be fastened to frame 10 without disturbing an already completed optical alignment of the optical subassemblies (TOSA 12 and ROSA 13) with the optical fibers with which they communicate. Such mounting also can be carried out in other ways such as described in specification paragraph [0055] explaining a gap and adhesive arrangement in Applicants' third exemplary embodiment. In any event, once receptacle 11 is fixed to frame 10, the primary portions 12b and 13b of optical subassemblies 12 and 13 are held fixed to the frame to carry out the heat dissipation function.

Applicants have analyzed Huang and understand that Hunag's optical subassemblies 61 and 62 are fitted within the optical receptacle 4 such that the primary portions (that is the box-like portions) of subassemblies 61 and 62 likewise are fitted within optical receptacle 4. Only the lead pins from the coupled subassemblies and optical receptacle extend from this "intermediate assembly" thereof. In Huang's receiver, frame 2 is fitted with upper frames 3 and 11. However, Huang's frames 2, 3, and 11 do not affix the optical subassemblies. Rather, circuit board 5 is fixed thereto by screws, and only the lead pins 605 of the "intermediate assembly" of the subassemblies with the optical receptacle are fixed to the circuit board. Thus, Huang does not teach or suggest a moveably mounted arrangement between the "intermediate assembly" of the optical receptacle and optical subassemblies, and the frame. Applicants submit

that Huang does not suggest any concern for heat dissipation of the devices within the subassemblies, while providing flexibility for first ensuring excellent optical coupling. Therefore, to those of ordinary skill in the art, Huang cannot be said to convey Applicants' requirements for a structure that takes into consideration both optical coupling and heat conduction.

For at least these reasons, independent claims 1 and 14 patentably distinguish over Huang. Hence, the rejection of claims 1 and 14, together with their dependent claims 1-3, 6, 8-10, and 15-17 as anticipated by Huang is overcome. Withdrawal of this rejection courteously is solicited.

Claim 5 has been rejected separately over Huang alone. It has been contended that claim 5 is obvious over Huang under 35 U.S.C. § 103(a). This rejection likewise is traversed.

For the reasons stated in the foregoing, Huang does not teach or suggest Applicants' structure as set forth in independent claim 1. By depending from claim 1, claim 5 likewise patentably distinguishes over Huang. Hence, the rejection of claim 5 alone is overcome. The rejection must be withdrawn.

Lastly, claims 7 and 16 have been rejected under 35 U.S.C. § 103(a) as purportedly unpatentable over Huang in view of U. S. Patent 6,867,368 to Kumar et al. This rejection is traversed.

The Kumar et al. patent does not remedy the deficiencies of Huang with respect to claims 1 and 14. Hence, the rejection of claims 7 and 16 over Huang and Kumar et al. likewise is overcome. Withdrawal of this rejection similarly is solicited.

In view of the foregoing amendments and Remarks, it courteously is urged that all of the pending claims are allowable, and that this application is in condition for allowance. Favorable action in this regard earnestly is solicited.

If any other fees under 37 C.F.R. §§1.16 or 1.17 are due in connection with this filing, please charge the fees to Deposit Account No. 02-4300; Order No. 033035 M 140. If an extension of time under 37 C.F.R. § 1.136 is necessary that is not accounted for in the papers filed herewith, such an extension is requested. The extension fee should be charged to Deposit Account No. 02-4300; Order No. 033035 M 140.

Respectfully submitted,

SMITH, GAMBRELL & RUSSELL, LLP

By:



Michael A. Makuch, Reg. No. 32,263
1850 M Street, N.W., Suite 800
Washington, D.C. 20036
Telephone: (202)263-4300
Facsimile: (202) 263-4329

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